

Application No. 10/606,104
Amendment "A" dated March 15, 2005
Reply to Office Action mailed December 17, 2004

REMARKS / ARGUMENTS

The present Amendment is in response to the Examiner's Office Action mailed December 17, 2004. Claims 1, 8, 10, 16, and 23 are currently amended, and new claims 31-36 are added. Claims 1-36 are now pending in view of the above amendments.

Please note that the following remarks are not intended to be an exhaustive enumeration of the distinctions between any cited references and the claimed invention. Rather, the distinctions identified and discussed below are presented solely by way of example to illustrate some of the differences between the claimed invention and the cited references. In addition, Applicants request that the Examiner carefully review any references discussed below to ensure that Applicants' understanding and discussion of the references, if any, is consistent with the Examiner's understanding. Reconsideration of the application is respectfully requested in view of the above amendments to the claims and the following remarks. For the Examiner's convenience and reference, Applicant's remarks are presented in the order in which the corresponding issues were raised in the Office Action.

Examiner's Interview

Applicant's express their appreciation to the Examiner for conducting an Interview on February 28. This amendment includes the substance of the Interview.

Claim Rejections Under 35 U.S.C. 112

Claims 10-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In particular, claim 10 recites "the laser may have a wavelength greater than 1200 nm. Claim 10 has been amended by replacing "may have" with "has" to overcome the rejection under 35 U.S.C. 112. Claims 11-15 also overcome this rejection in view of the amendment to claim 10.

Claim Rejections Under 35 U.S.C. 102

Claims 1-17 and 23-30 including independent claims 1, 8, 16, and 23 were rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 5,719,891 (*Jewell*).

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As discussed at the interview, claim 1 has been amended to require that said one layer has an aluminum content of less than 60% before being oxidized. As discussed at the Interview, Jewell teaches that Aluminum will "comprise at least 60% of the group-III material in oxidizing, i.e. oxidizable layer." See col. 7, lines 12-14. Jewell further teaches that "Al[uminum] will comprise at least 60% of the group-III material in oxidized layers." See col. 9, lines 36-37. Because Jewell teaches that the oxidizable layer has at least 60% Aluminum, Jewell does not teach a layer with an aluminum content of less than 60%. As a result, Jewell does not anticipate claim 1 or claims that depend from claim 1.

As discussed at the interview, claim 8 has been amended to require "a first mirror having a plurality of layers including at least one pair of layers having an InP layer and an oxidized layer". Although the Office Action indicates that Jewell discloses, at col. 7, lines 4-9, that "one layer of at least one pair of the plurality of pairs of layers comprises InP, a review of Jewell as discussed at the interview indicates that Jewell does not teach InP as being one layer of at least one pair of the plurality of pairs. As a result, Jewell does not anticipate claims 8, 16, and 23 or claims that depend therefrom.

For at least these reasons, Jewell does not anticipate independent claims 1, 8, 16, and 23. Claims 2-7, 9-15, 17, and 24-30 depend from claims that are believed to be allowable and overcome the cited art for at least this reason.

Claims 16-18 were rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,680,964 (Kim). As discussed in the interview, Kim does not teach "the first stack of layers including one or more layers of InP". Rather, Kim teaches high aluminum content AlGaAs and low aluminum content AlGaAs for the first and second mirror stacks. See col. 5, lines 13-16. Kim teaches InP for the substrate, but does not teach InP in the mirror stacks. See col. 5, lines 19-20.

Further, Figures 1B-1C were cited as disclosing claim 16. However, Figures 1B-1C do not disclose "wherein approximately every other layer of said first stack of layers is at least partially oxidized". While Kim does disclose oxidized portion 28, the oxidized portion 28 is used for current confinement and does not illustrate "every other layer" as discussed at the interview. See col. 3, lines 53-60. The oxidized portion 28 "is oxidized from the exposed side regions inwardly toward a centrally located aperture region 30." See col. 3, lines 30-32. Thus,

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Kim does not disclose partially oxidizing every other layer. Further, the oxidized portion 28 taught by Kim is not in the first stack of layers adjacent the substrate, while claim 16 requires the first stack being formed on the substrate. For at least these reasons, claims 16-18 are not anticipated by Kim.

Claim Rejections under 35 U.S.C. 103

Claims 19-21 were rejected under 35 U.S.C. 103(a) as being unpatentable over Kim in view of Jewell. Claims 19-21 depend from claim 16, which for at least the reasons discussed above, is in condition for allowance. Further, neither Jewell or Kim teaches layers of InP in the first mirror or an Aluminum content of less than 60% in the oxidized layers. As a result, there is no motivation to combine Kim and Jewell regarding claims 19-21. As a result, claims 19-21 are believed to be in condition for at least these reasons.

New Claims

New claims 31-36 have been added as discussed at the interview. New claim 31 requires "a first mirror having six or less pairs of layers, wherein one layer of each pair of layers is an oxidized layer". The background of the specification indicates that in order to achieve the required reflectivity for conventional mirrors, a large number of DBRs may be required. For example, lattice matched InP based mirrors . . . may require 45 or more periods. Sometimes 25 mirror pairs may be required.

Jewell states that "due to the large number of oxidized layers in some of the illustrations, the oxidized layers are identified by drawing fill texture rather than by numbers. See col. 6 line 68 – col. 7 line 2. In contrast to the large number of oxidized layers suggested by Jewell, new claims 31-34 require a first mirror having six or less pairs of layers, each pair of layers having an oxidized layer.

New claims 35 and 36 require at least six pairs of layers. In addition, new claims 35 and 36 depend from claims 1 and 8, respectively.

For at least these reasons, new claims 31-36 are believed to be in condition for allowance.

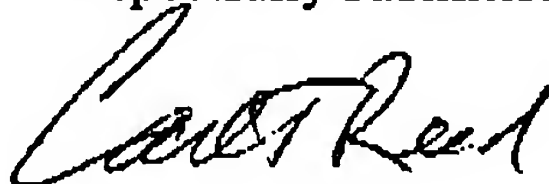
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Conclusion

In view of the foregoing, and consistent with the subject matter discussed during the Examiner Interview, Applicants believe the claims as amended are in allowable form. In the event that the Examiner finds remaining impediment to a prompt allowance of this application that may be clarified through a telephone interview, or which may be overcome by an Examiner's Amendment, the Examiner is requested to contact the undersigned attorney.

Dated this 15th day of March 2005.

Respectfully submitted,



CARL T. REED
Registration No. 45,454
Attorney for Applicant
Customer No. 022913
Telephone: (801) 533-9800

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